

### **REMARKS / ARGUMENTS**

The action by the Examiner of this application, together with the cited references, have been given careful consideration. Following such consideration, claim 2 has been canceled, claims 4, 5, 8, and 10-16 remain unchanged, and claims 1, 3, 6, 7, and 9 have been amended to define more clearly the patentable invention Applicant believes is disclosed herein. This amendment is presented according to "Revised Amendment Practice" (37 C.F.R. 1.121), effective July 30, 2003. It is respectfully requested that the Examiner reconsider the claims in their present form, together with the following comments, and allow the application.

As the Examiner well knows, the present invention is generally directed to a Li-ion polymer battery. The battery is comprised of a battery assembly made up of stacked battery cells. The battery cells are comprised of a first layer of a conductive material that is disposed within an anode section and a second layer of a conductive material that is disposed within a cathode section. Because such battery assemblies are dimensioned to snugly fit within a sleeve, care must be used inserting the battery assembly within the sleeve so as not to snag or catch the ends or edges of the battery cell. In this respect, catching or snagging an edge or end of the battery cell during manufacture may cause shifting or misalignment of the layers of the battery cell, potentially affecting the performance of the battery cell. In addition, flexible packaging of polymer batteries allow some sliding or shifting of the cell within the package. The shifting or sliding can cause displacement or movement of the battery layers within the packaging that may cause shorting of the battery.

The present invention provides a Li-ion polymer battery comprised of a battery assembly and a plurality of battery cells that each have at least one cathode section, one anode section and a separator layer disposed between the anode section and the cathode section. The polymer battery has a plurality of reinforcing bands wrapped around the peripheral edge of the battery assembly thereby securing the battery cells together. Each reinforcing band has a polymer layer and an adhesive layer. The adhesive layer of the reinforcing band is between the polymer layer and the peripheral edges of the battery assembly. The reinforcing bands are dimensioned to reinforce the corners of the battery assembly so as to maintain the alignment and structural integrity of the battery cells that form the battery assembly during the manufacture of the polymer battery.

It is respectfully submitted that none of the cited references teach, suggest, or show a Li-ion polymer battery as presently set forth in the claims, or the advantages thereof. In response to the Examiner's rejections, claims 1, 3, 6, 7, and 9 have been amended. Claim 1 has been amended to recite: "A Li-ion and/or Li-ion polymer battery, comprised of: a battery assembly comprised of a plurality of cells ... and a plurality of reinforcing bands wrapped around the peripheral edges of said battery assembly securing said plurality of battery cells together, wherein each band is comprised of an outer flexible polymer layer and an inner adhesive layer and said inner adhesive layer is between said outer polymer layer and said peripheral edges of said battery cells and each band captures the entire assembly." Claim 9 has been amended to depend from claim 1 and such that "said protective layers" now reads "said reinforcing bands." Claims 3, 6, and 7 have been amended to properly recite the claim from which they depend.

The Examiner has rejected claim 9 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. It is believed that the foregoing amendments describe the present invention with greater particularly and clarity. Therefore the Applicant respectfully requests the Examiner to withdraw the 35 U.S.C. 112(b) rejection.

Claim 1 stands rejected under 35 U.S.C. 102(b) as being clearly anticipated by Japanese Patent No. 9-293499 (abstract and FIG. 1).

Japanese Patent No. 9-293499 to Shinichi et al. discloses a nonaqueous electrolyte secondary battery having a plurality of layers comprised of anode layers, separators, and cathode layers. The layers are held together by clips 1 as shown in the figure. Clips 1 apply pressure to outside flat plates 2 that compress the battery. The clips 1 apply pressure to the plates 2, through the tip ends of the clips 1.

The '499 reference does not teach, suggest, or show an outer polymer layer and an inner adhesive layer where the inner adhesive layer is between the outer polymer layer and the peripheral edges of the battery cells. As can be seen in the figure, the clips 1 do not contact the layers of the battery and the clips 1 do not wrap around the edges of battery.

Claim 1 has also been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,487,958 to Tura in view of U.S. Patent No. 6,063,519 to Barker et al.

Tura teaches frames for a planar battery. The planar battery is comprised of a plurality of battery cells that each have a cathode section, an anode section, and a separator. The battery cells are stacked together to form sections and then frames are added to the sections to form small stacks of battery cells. The frames are positioned such that a pair of frames wraps portions of one section. The small stacks of battery cells are put together so that the frames from each section interconnect thereby forming a battery. The battery can then be vacuum sealed using vacuum seal package materials 70 and 72 formed around the battery. "This vacuum sealing compresses the planar battery cells so as to reduce the size of the battery. Additionally, the vacuum sealing holds the battery together" (column 4, lines 57-59). "The vacuum seal crimps together the vacuum seal package materials 70 and 72 with an adhesive material" (column 4, lines 54-56).

The Tura reference does not disclose an outer polymer layer and an inner adhesive layer where the inner adhesive layer is between the outer polymer layer and the peripheral edges of the battery cells. In addition, the frames do not wrap around the entire battery. Furthermore, the frames do not secure the plurality of battery cells together. Instead, the frames in the Tura reference allow vertical movement and compression of the battery cell during the vacuum sealing process thereby further demonstrating that there is no adhesive layer along the peripheral edges of the battery cell.

The Barker et al. reference discloses a bi-cell polymer matrix battery having cathode layers and anode layers. Both cathode and anode layers may have a wire mesh collector.

The Barker et al. reference does not teach, suggest, or show an outer polymer layer and an inner adhesive layer where the inner adhesive layer is between the outer polymer layer and the peripheral edges of the battery cells.

The battery assembly of the present invention has a plurality of battery cells wherein each battery cell includes at least one cathode section, at least one anode section, and at least one separator layer. A plurality of reinforcing bands is wrapped around the peripheral edges of the entire battery assembly securing the battery assembly together. The plurality of reinforcing bands is comprised of an outer polymer layer and an inner adhesive layer. The outer polymer layer is flexible and is wrapped around the peripheral edges of the battery assembly to form a low profile. The flexible polymer minimizes space occupied by the battery assembly in a

battery package. Minimization of the volume occupied by the battery assembly is important due to the space limitations placed on Li-ion batteries. The plurality of reinforcing bands wrap around the entire battery assembly. The inner adhesive layer is disposed between the outer polymer layer and the peripheral edges of the battery assembly. Thus, the present invention maintains the structural integrity of the battery assembly during manufacture.

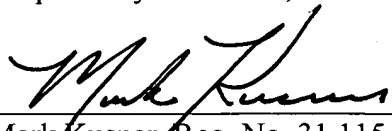
It is respectfully submitted that the prior art relied upon by the Examiner does not show an inner adhesive layer disposed between an outer polymer layer and the peripheral edges of a battery cell. It is also respectfully submitted that the prior art relied upon by the Examiner does not show reinforcing bands that wrap around then edges of the entire battery assembly.

The prior art made of record and not relied upon has also been reviewed. It is respectfully submitted that none of these additional references teach, suggest, or show, the Applicants' invention as defined by the present claims.

In view of the foregoing, it is respectfully submitted that the present application is now in proper condition for allowance. If the Examiner believes there are any further matters that need to be discussed in order to expedite the prosecution of the present application, the Examiner is invited to contact the undersigned.

If there are any fees necessitated by the foregoing communication, please charge such fees to our Deposit Account No. 50-0537, referencing our Docket No. PD7259US.

Respectfully submitted,

  
Mark Kusner, Reg. No. 31,115

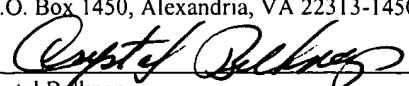
Date: 28 JUNE 2004

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I hereby certify that this correspondence (along with any paper referenced as being attached or enclosed) is being deposited on the below date with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: June 28, 2004

  
Crystal Belknap